

Emission Profiles of Early Action Compact Counties and Transportation Control Measures

By

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Objectives

- Provide information on emissions of NO_x on a statewide basis for 1999 and 2007
- Provide EAC specific information on emissions of NO_x by major source categories for 1999 and 2007
 - Incorporating emission reductions anticipated from the NO_x SIP call which requires reductions during the ozone season from Electric Generating Units and for selected large industrial boilers
 - Incorporating emission estimates/reductions from on-road mobile sources using the U.S. EPA MOBILE6 model
 - Show emissions from on-road mobile sources by vehicle types

Objectives

- Discuss additional emission reduction options that have been proposed by various air quality management agencies, including possible Transportation Control Measures (TCMs)
- Quantify, where possible, the emission reductions and costs of various options
- The later of these is in progress and is being developed for use by the EACs and associated MPOs as part of UT's work with TDOT—report to be completed by April

Emission Profiles

- Based on Tier 1/Tier 2 emissions for 1999 found at:

www.epa.gov/air/data

Provides data on approximately 12 source categories

www.epa.gov/air/data

1

2

3

NOx SIP Call

- Reductions in NOx Emissions at a number of EGUs in TN:
 - Allen Steam Plant--Memphis EAC
 - Kingston Steam Plant
 - Bull Run Steam Plant—Knoxville EAC
 - Cumberland Steam Plant
- Reductions in NOx at 10 different Industrial Boiler Facilities

TDOT Report

EFFECTS OF GROWTH IN VMT AND NEW MOBILE SOURCE EMISSION STANDARDS ON NO_x AND VOC EMISSIONS IN TENNESSEE

1999-2030

(Based on MOBILE6-Final Version)



March 14, 2002

Emission Estimates (1999-2030)

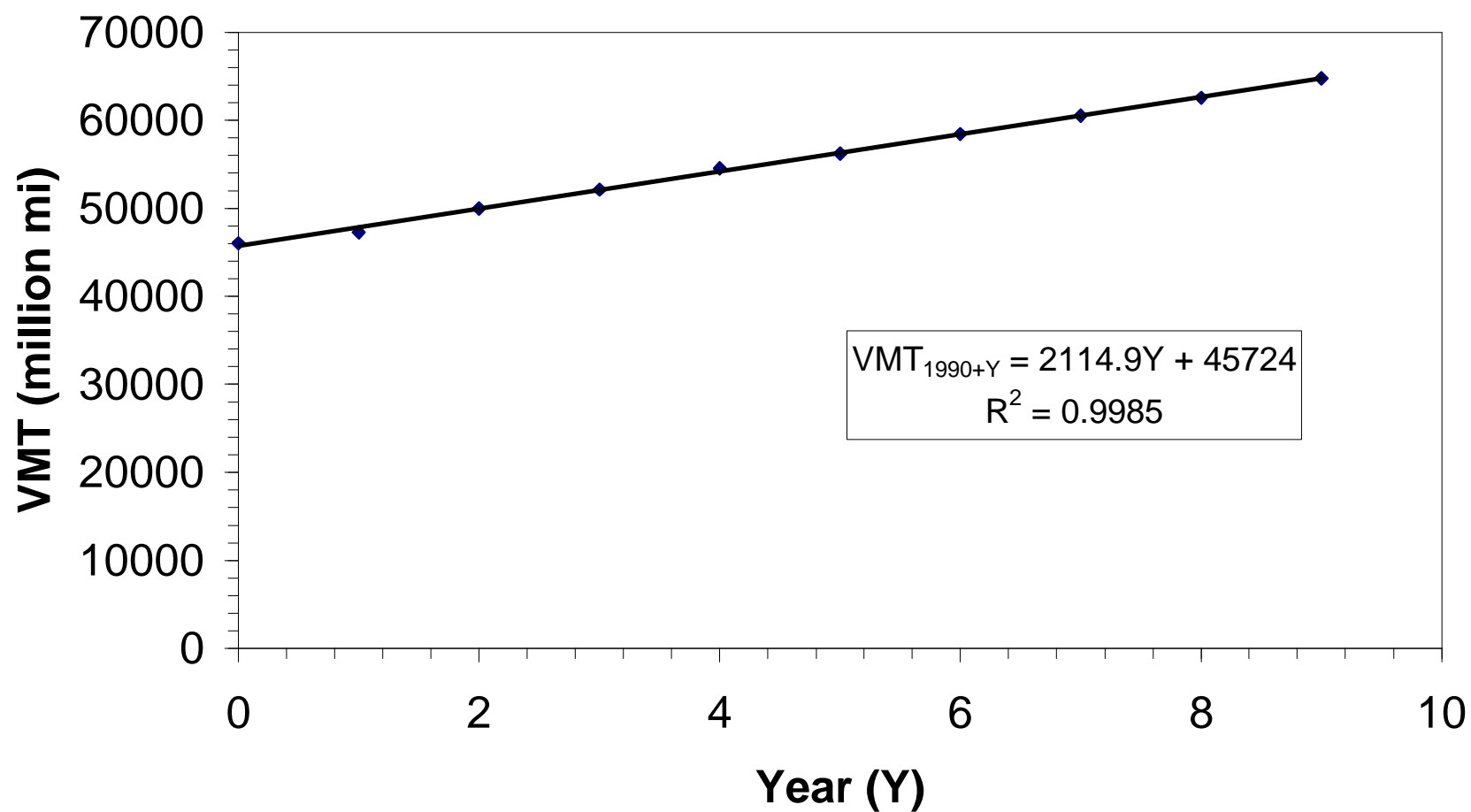
- MOBILE 6 (Jan 2002) and all emission standards promulgated to 2030
 - LEV (2001)
 - Tier2/Sulfur (2004-2006)
 - HDDV NOx (2004-2006)
 - HDDV/Sulfur (2006)
- County Level VMT by roadway classification

Emission Estimates (1999-2030)

- Regional (East, Middle, West Tn) meteorology (T_{\min} , T_{\max} , RH)
- MPO specific RVP, I/M
 - Memphis
 - Nashville (5 county area)
- Roadway classification specific vehicle speeds (based on a composite of studies done in the three larger MPOs who currently do conformity analyses)

Emission Estimates (1999-2030)

- Area specific vehicle mix based on state registration data, EPA default mileage accumulation rates (AMAR), and TDOT data for heavy duty vehicles
 - Shelby+--Shelby, Tipton, Fayette
 - Davidson+--5 county MSA
 - Hamilton+--Hamilton, Marion
 - Knox+--Knox, Anderson, Loudon, Blount, Sevier
 - Sullivan+ Sullivan, Hawkins, Washington, Carter, Unicoi
 - All other counties
- Emissions were prepared for each EAC



**Figure 2-3(b). State Wide Annual VMT vs Year (1990-1999)
(linear fit)**

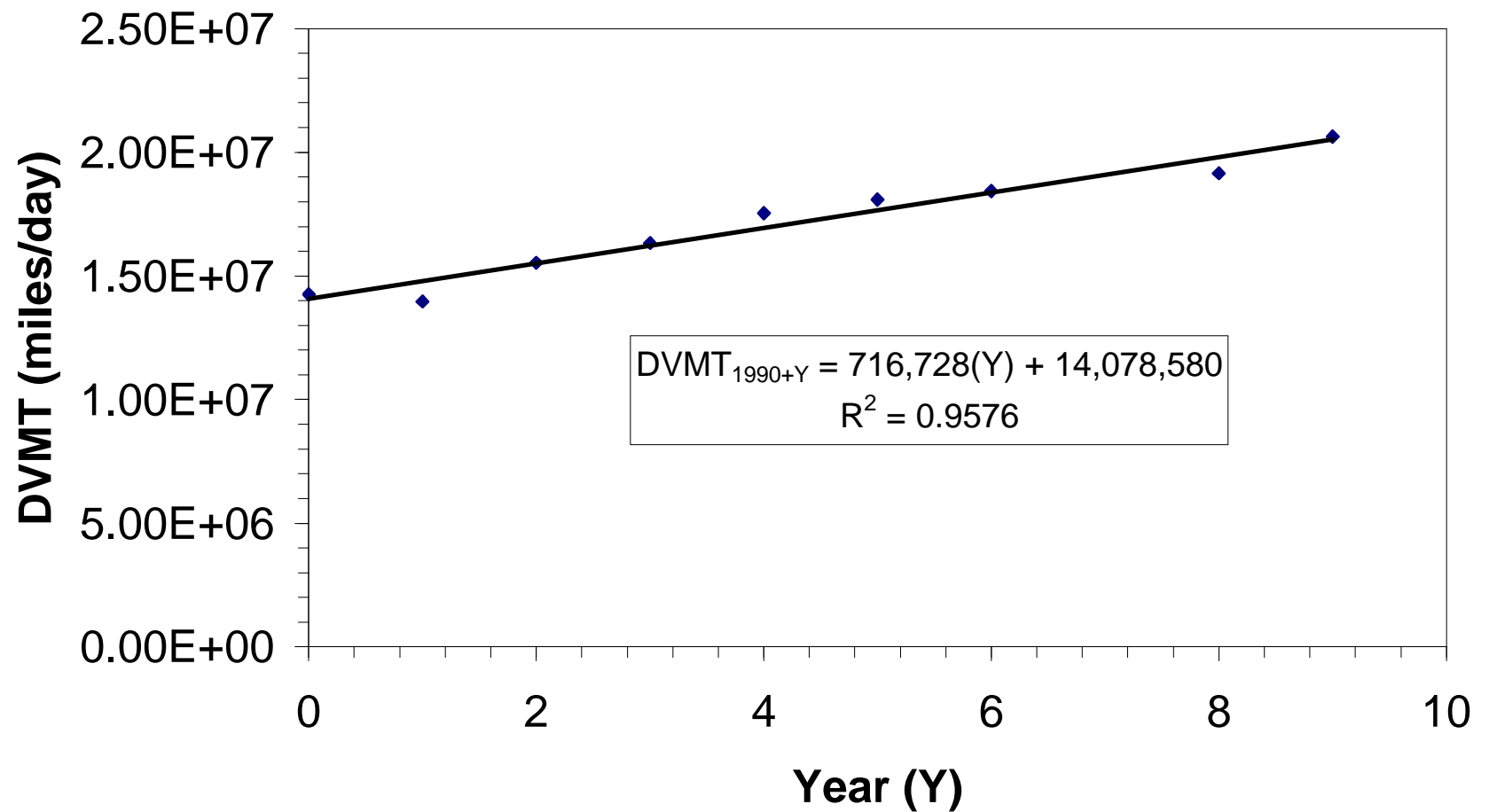


Figure 2-4. Davidson DVMT vs Year (1990-1999)

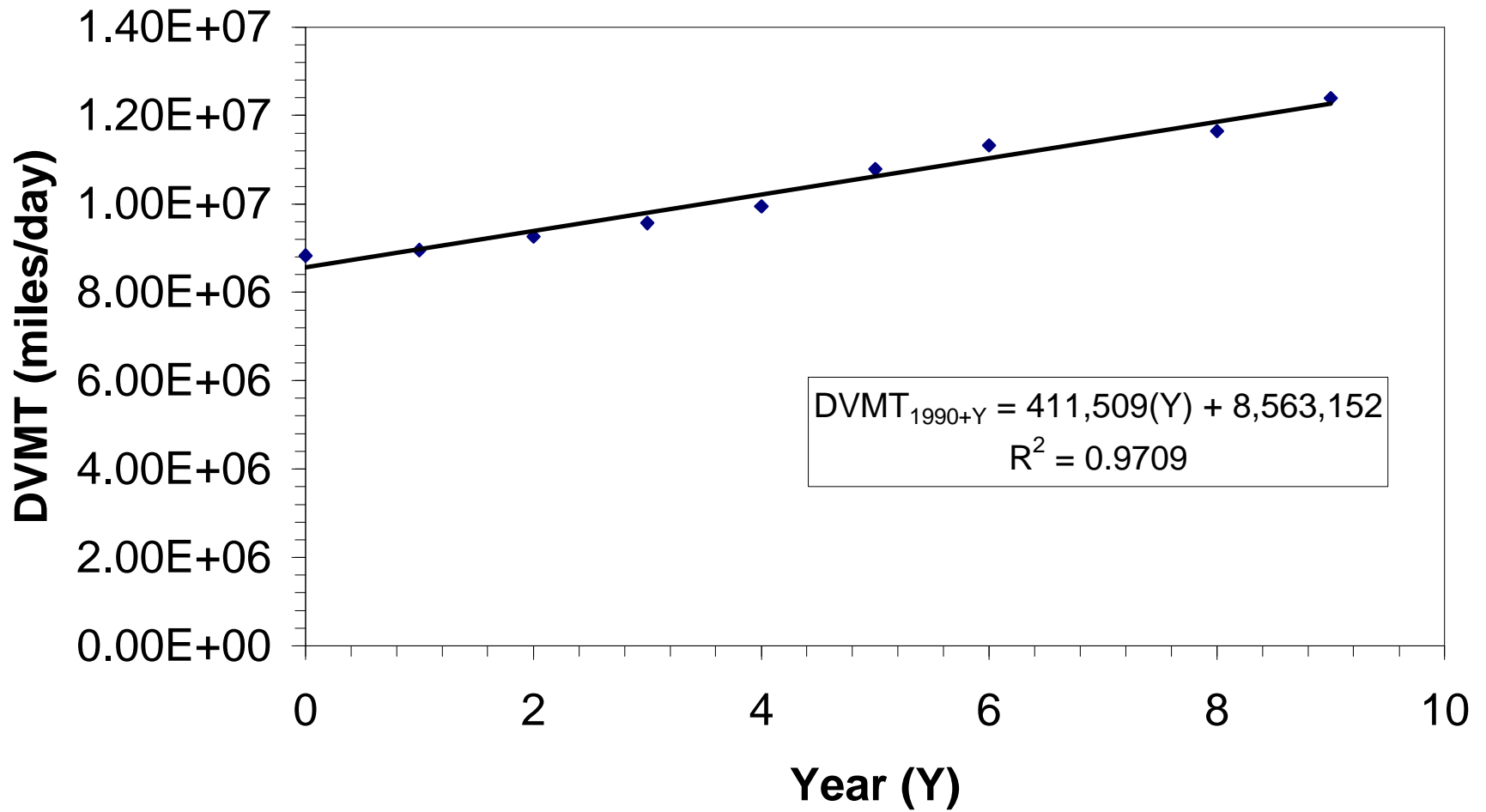


Figure 2-6. Knox DVMT vs Year (1990-1999)

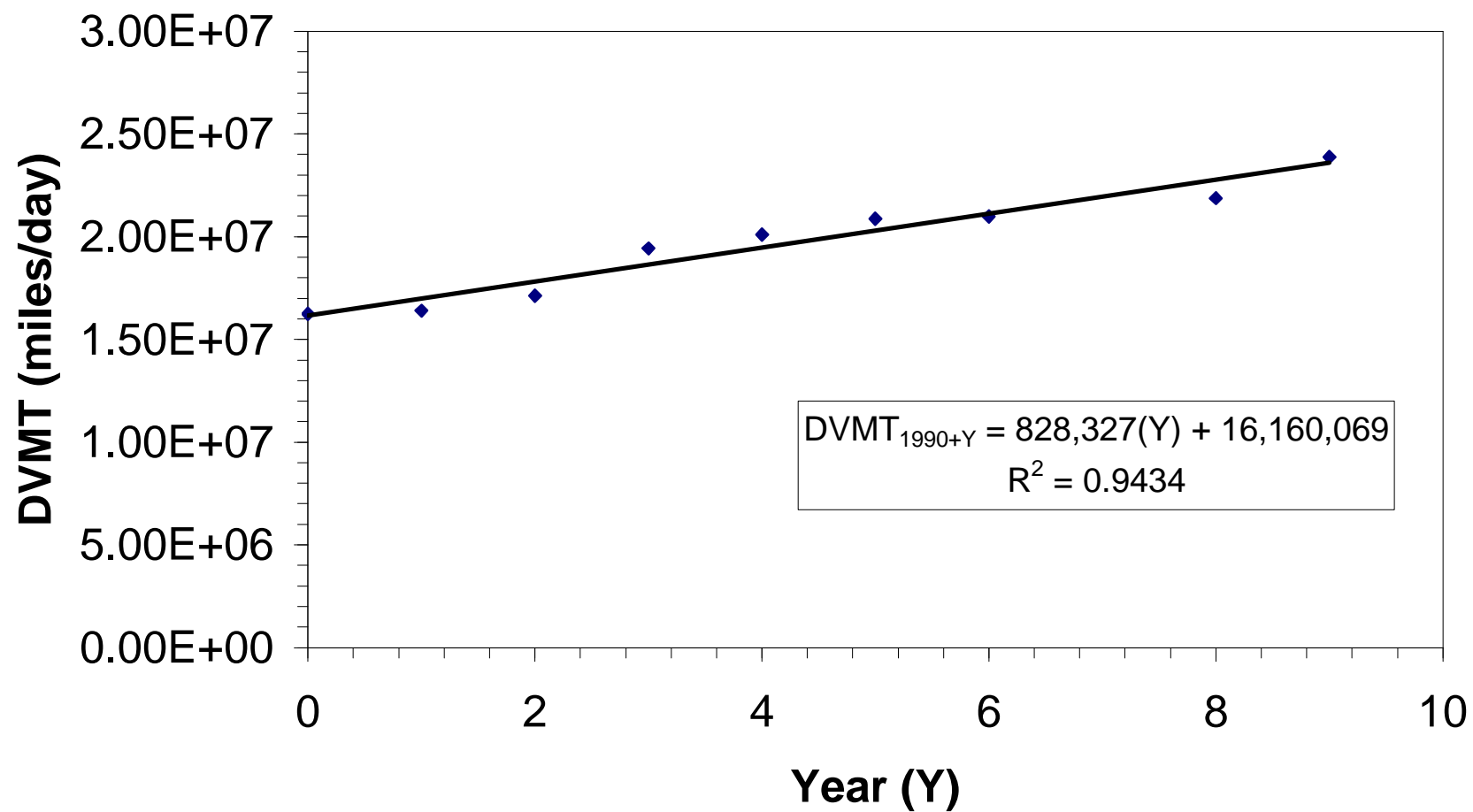
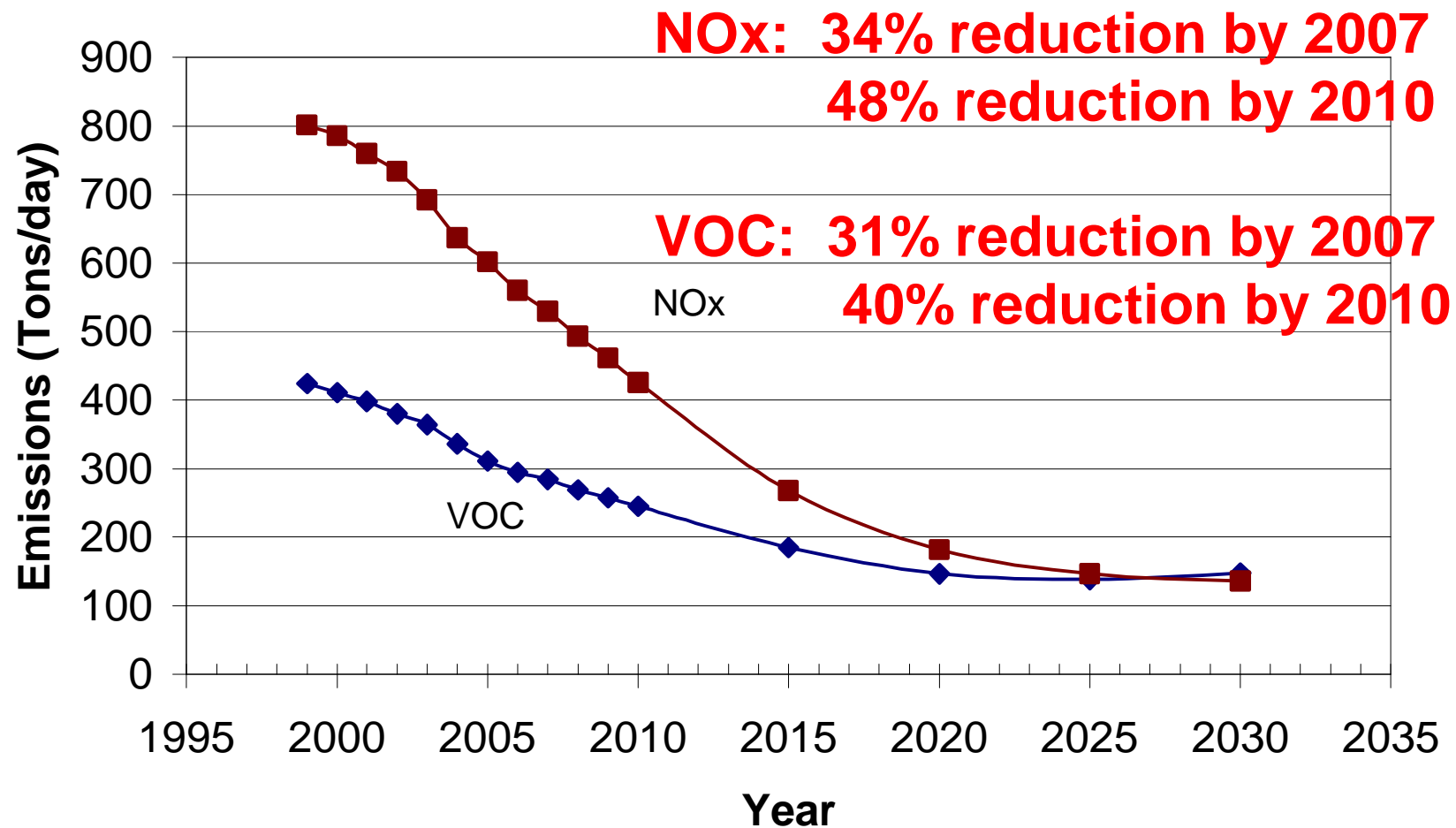


Figure 2-7. Shelby DVMT vs Year (1990-1999)



**Figure 4-6. Total Projected Emissions in Tennessee
(MOBILE6)**

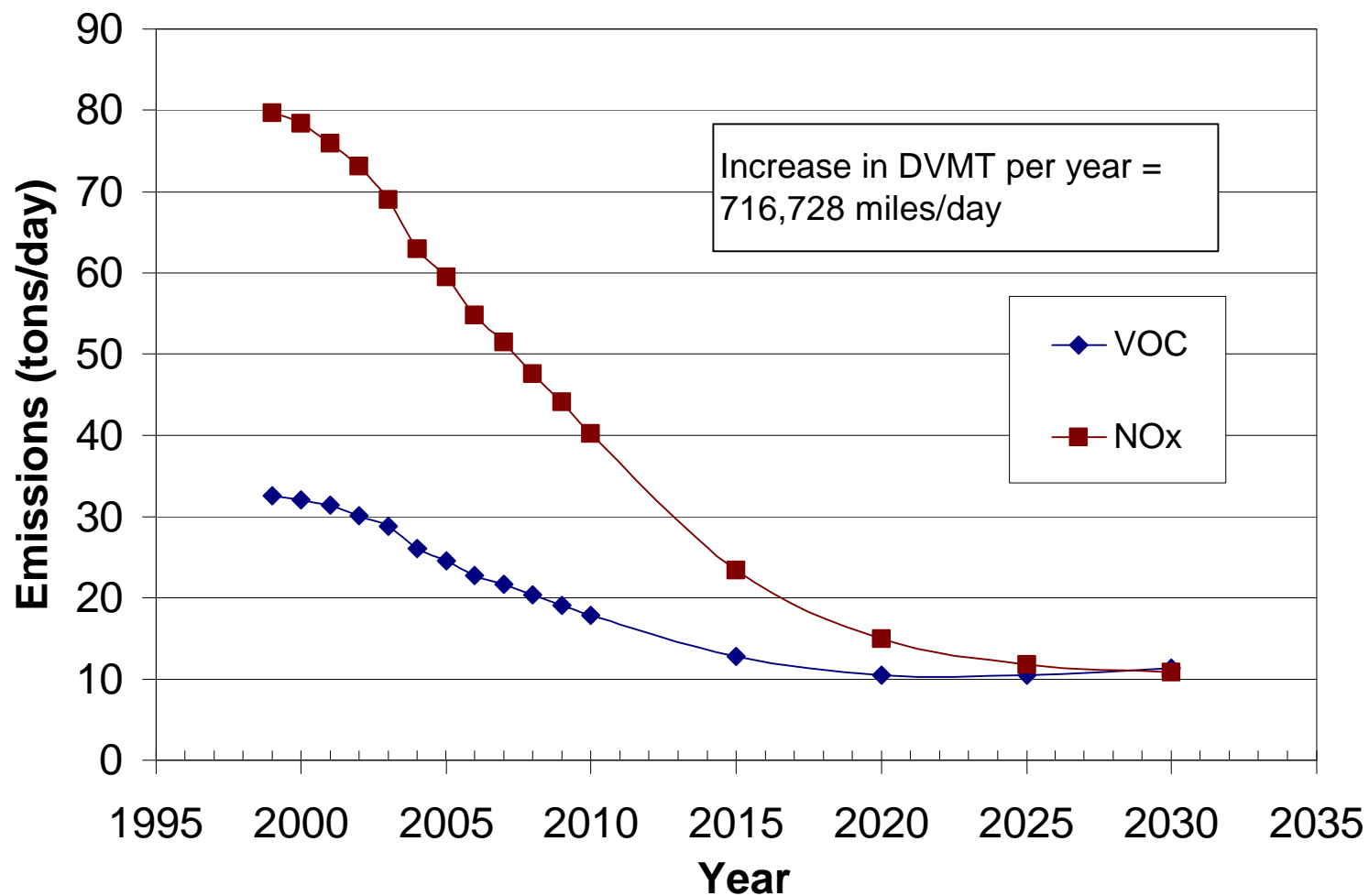


Figure 4-1. Davidson County - Mobile Source Emissions (MOBILE6)

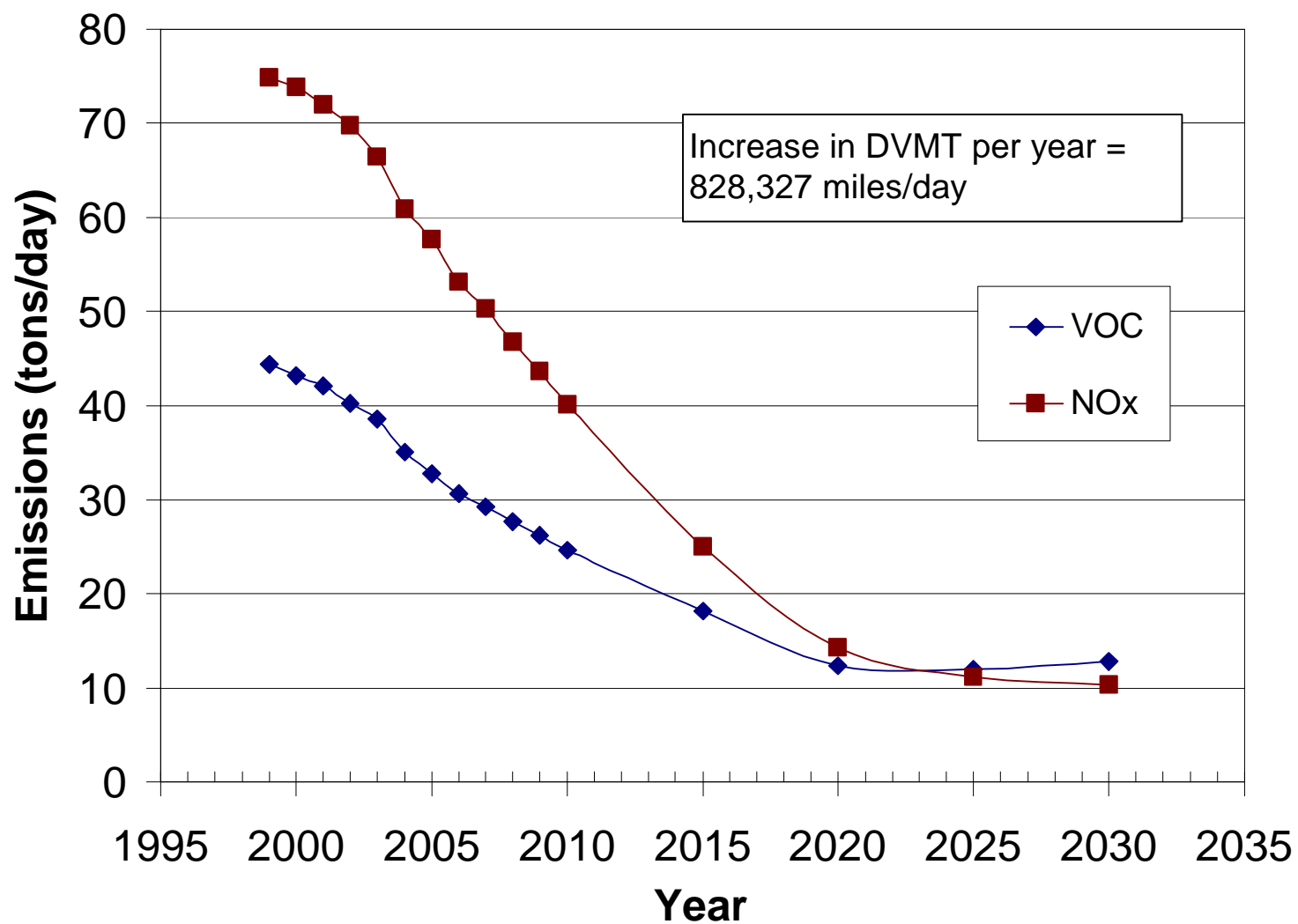


Figure 4-2. Shelby County - Mobile Source Emissions (MOBILE6)

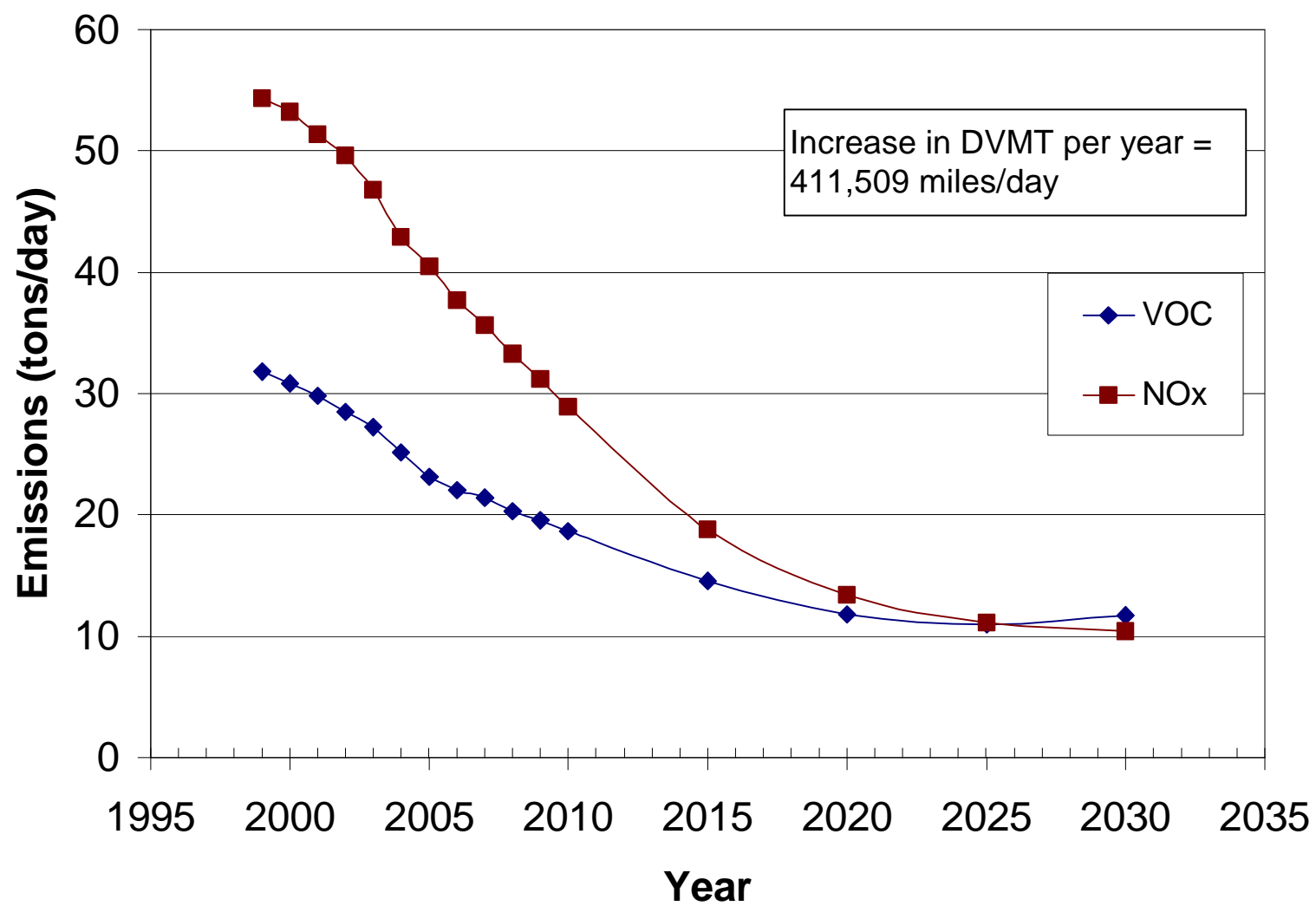


Figure 4-3. Knox County - Mobile Source Emissions (MOBILE6)

NOx Emissions for Tennessee (Ozone Season Day)

Source	1999		2007	
	Tons/day	%	Tons/day	%
Elec Util	518.2	25.6	160.0	11.1
Ind comb	237.1	11.7	235.9	16.4
Other comb	101.3	5.0	111.9	7.8
Chem Prod	7.0	0.3	7.8	0.5
Metal Proc	1.8	0.1	2.0	0.1
Petrol Ind	1.3	0.1	1.4	0.1
Other Ind	30.6	1.5	33.8	2.3
Solvent	0.2	0.0	0.3	0.0
Waste Disp	4.9	0.2	5.4	0.4
On Road	801.4	39.6	529.1	36.8
Off Road	314.7	15.6	347.7	24.2
Misc.	3.3	0.2	3.7	0.3
Total:	2021.8	100.0	1439.1	100.0

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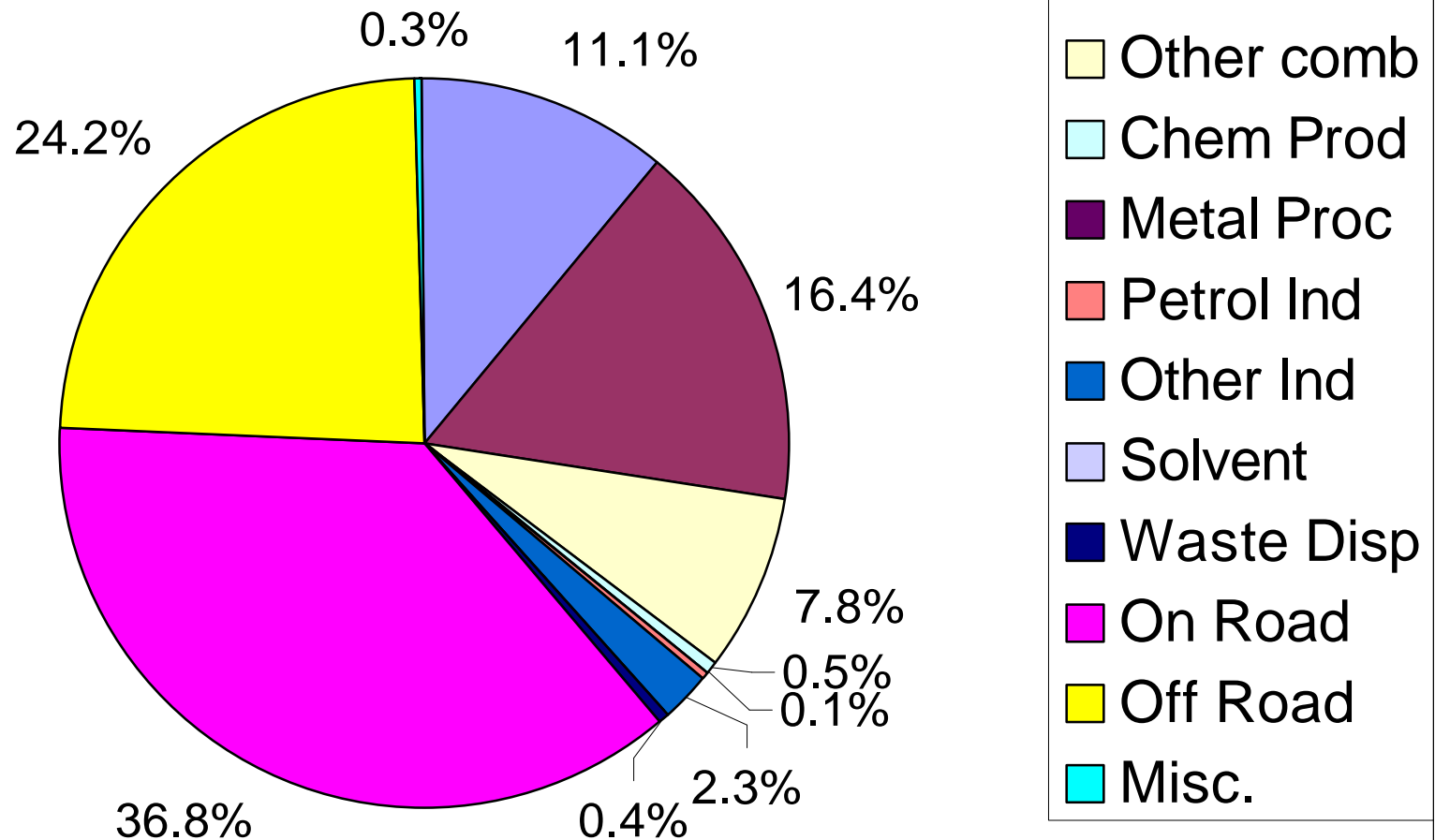
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Meta				0.1
Petro				0.1
Other				2.3
Solvent	0.2	0.0	0.3	0.0
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EGU emissions reduced by ~ 69%

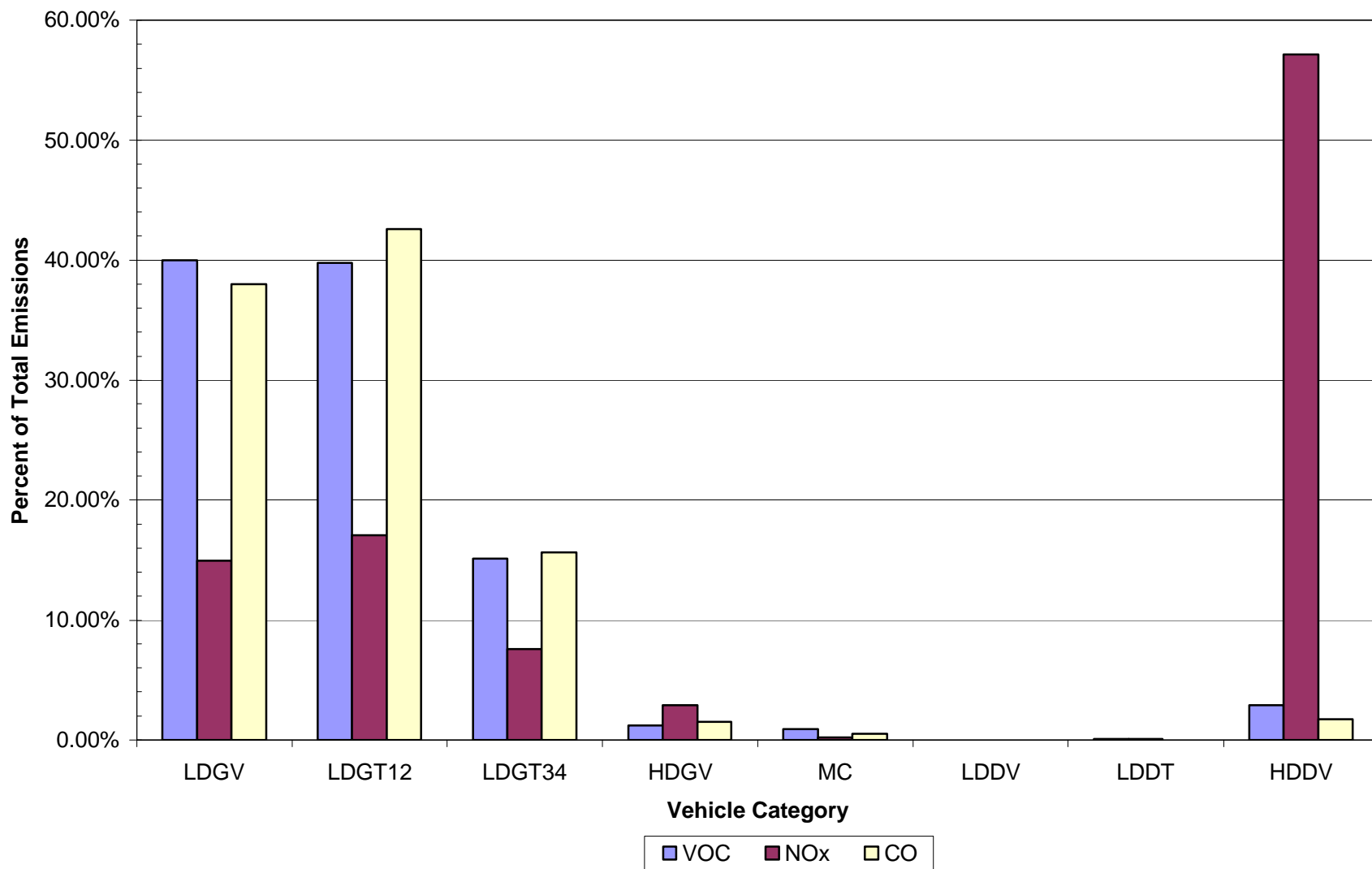
On-road Mobile reduced by ~ 34%

Total reduction of ~ 29% in TN by 2007

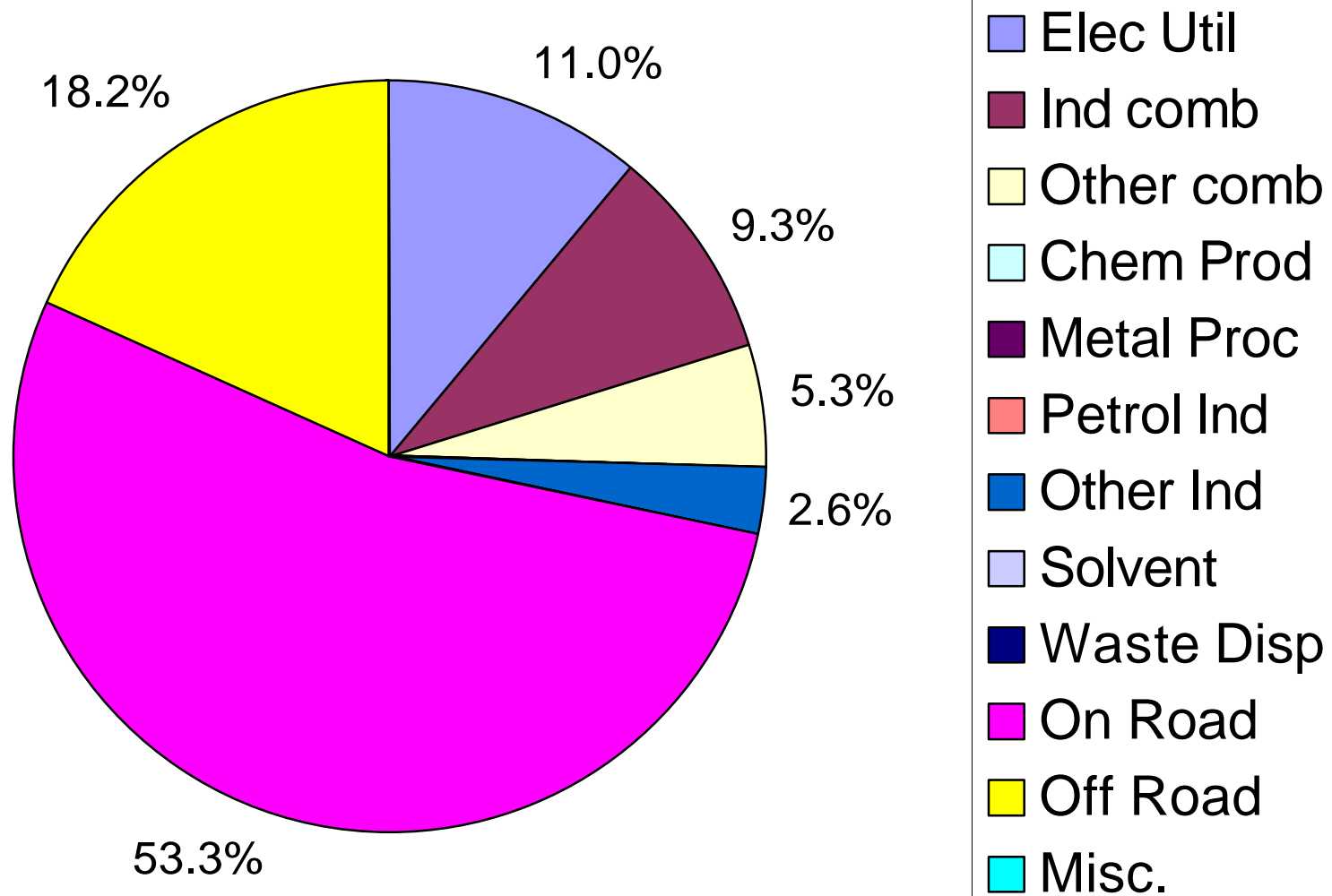
2007 Tennessee NOx Emissions (1439 tpd)



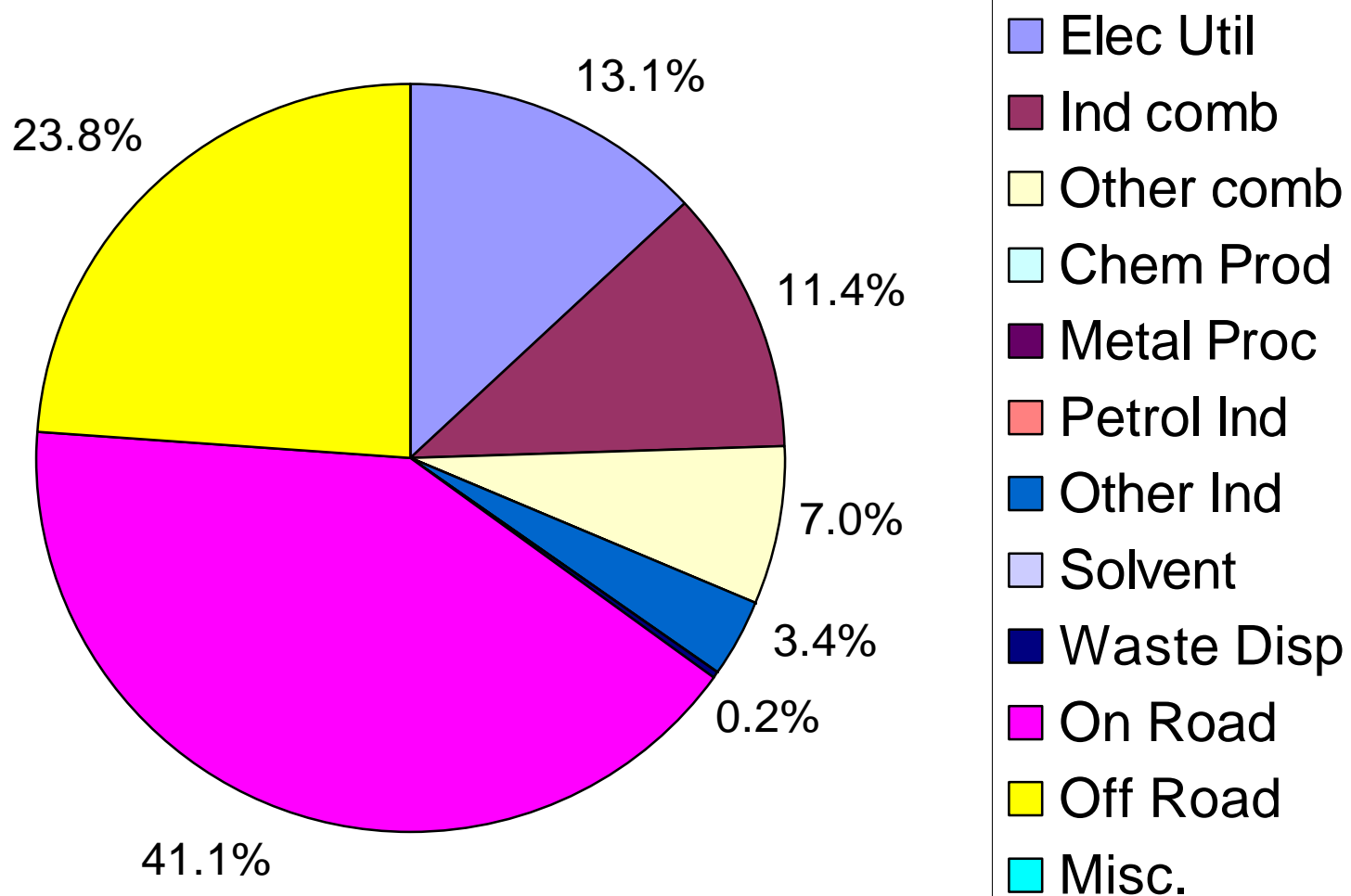
Tennessee
2007 Emissions Contribution by Each Vehicle Type



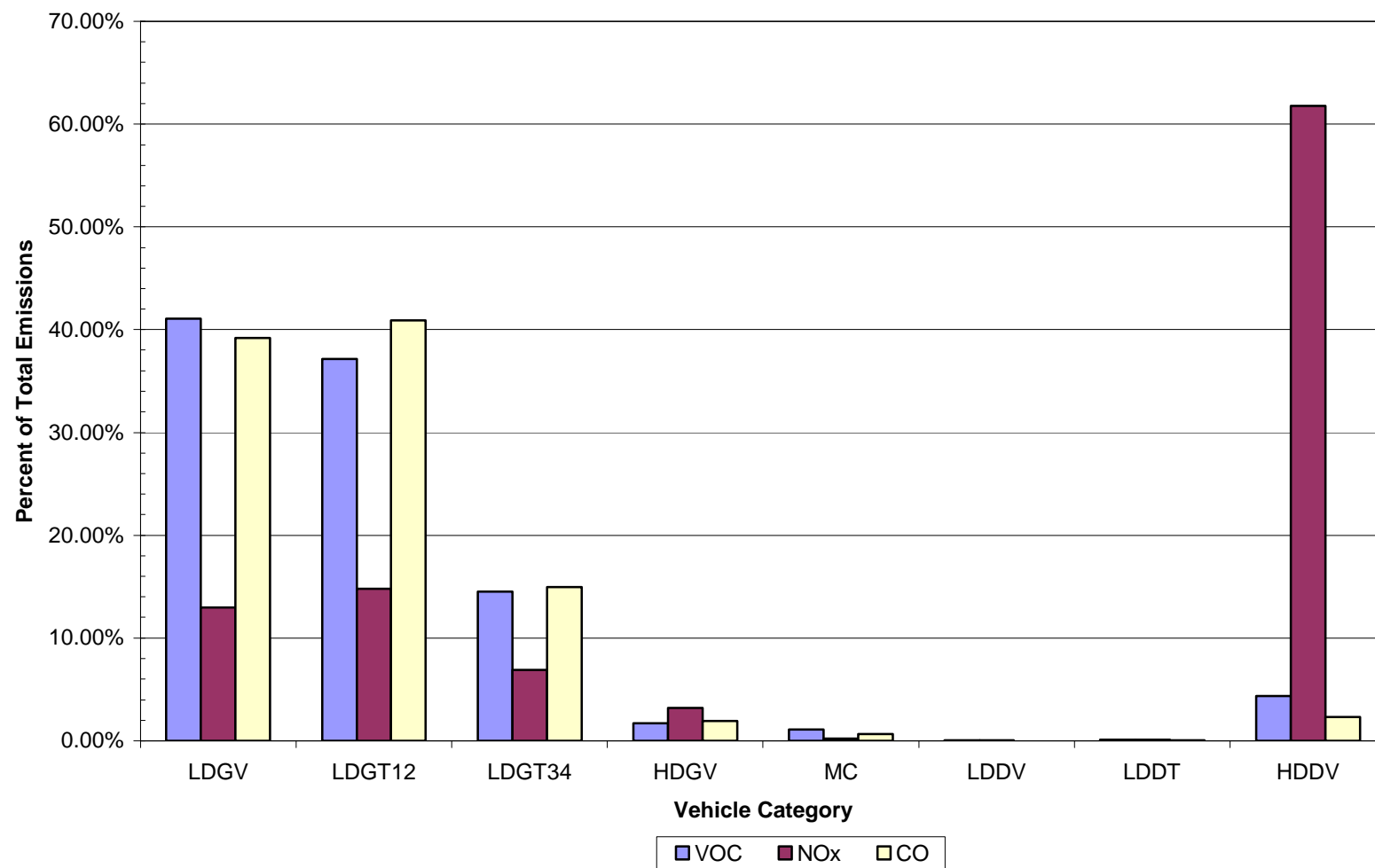
1999 NOx Emissions in Nashville EAC (352 tpd)



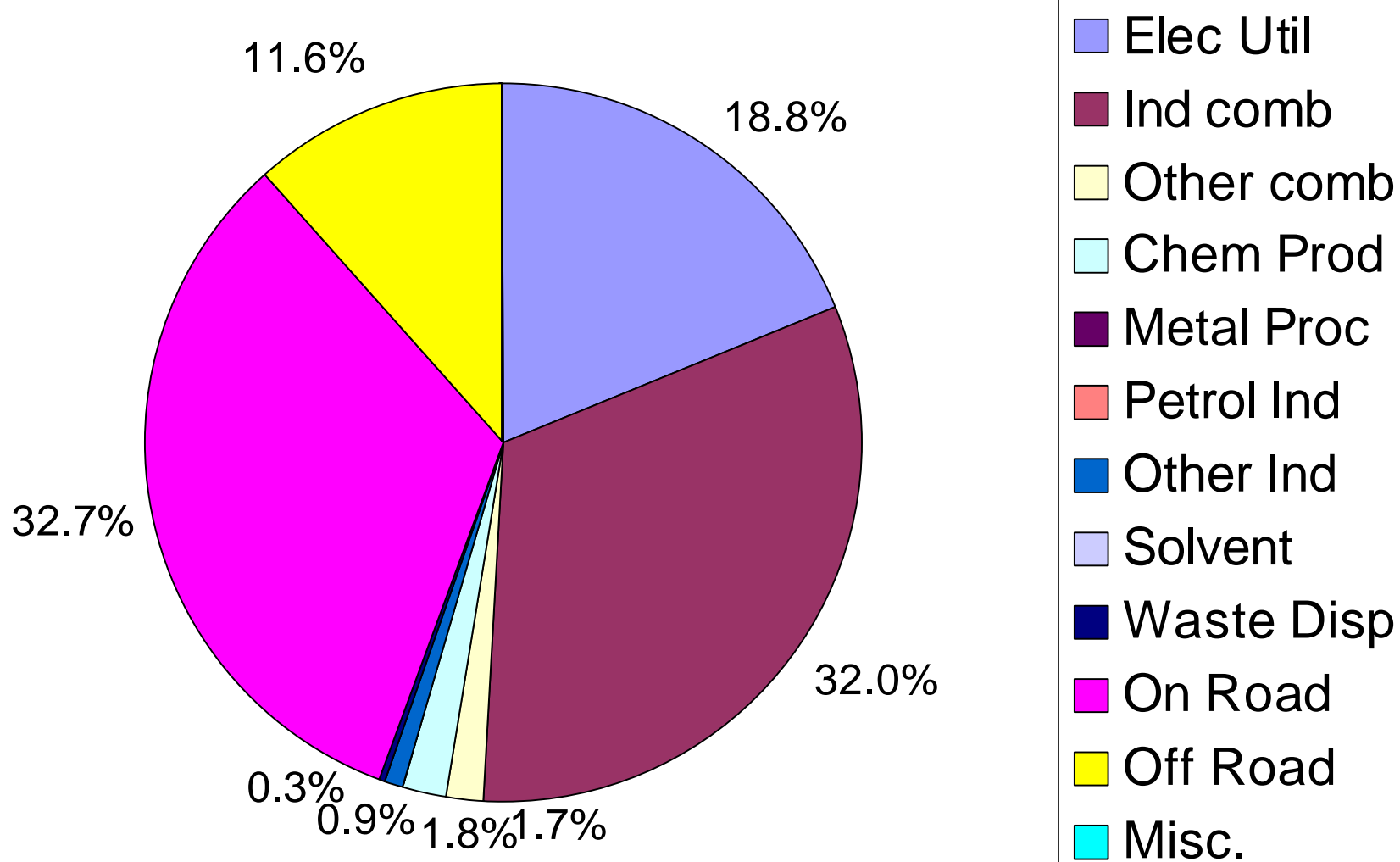
2007 NOx Emissions in Nashville EAC (298 tpd)



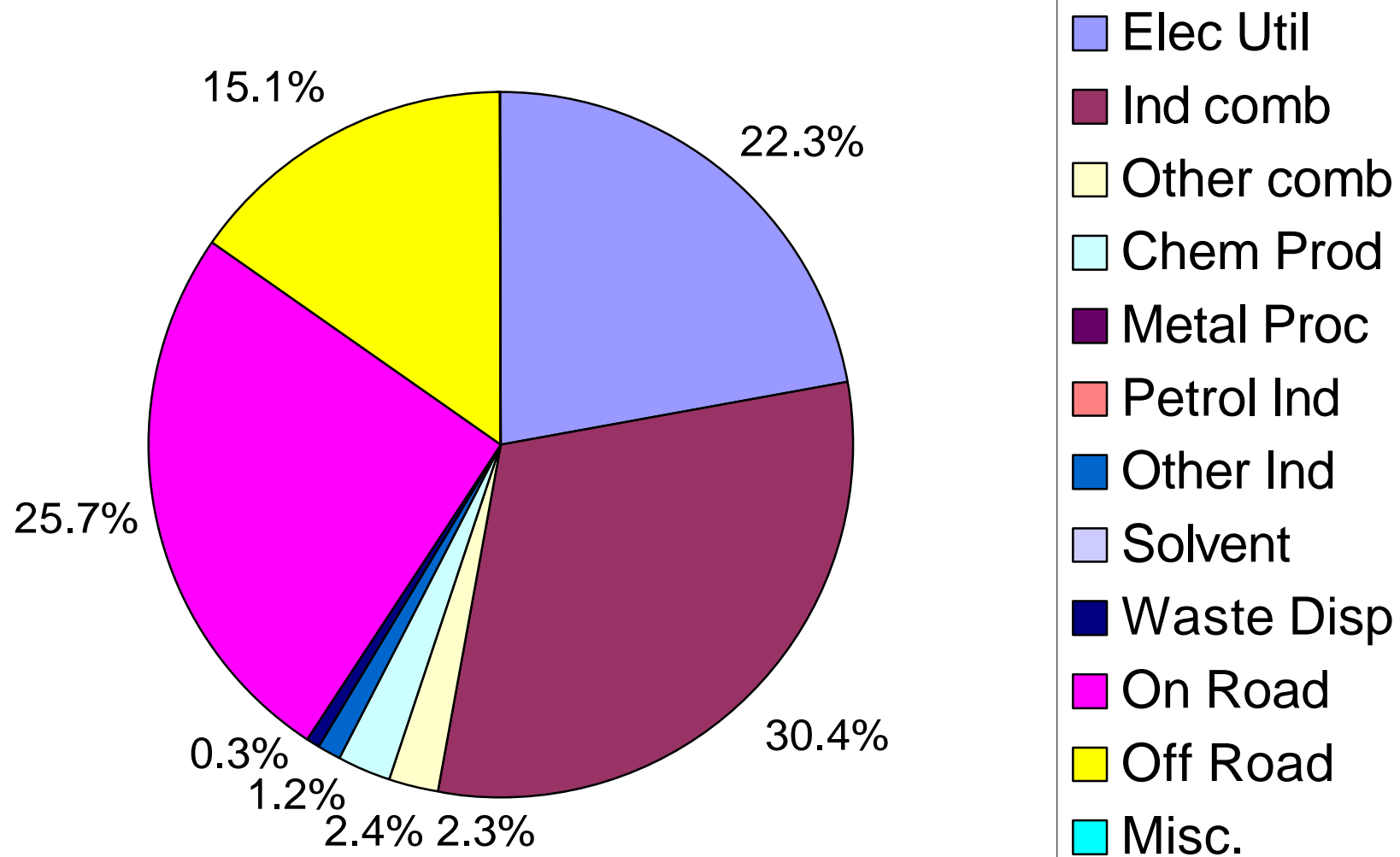
**Nashville EAC Area
2007 Emissions Contribution by Each Vehicle Type**



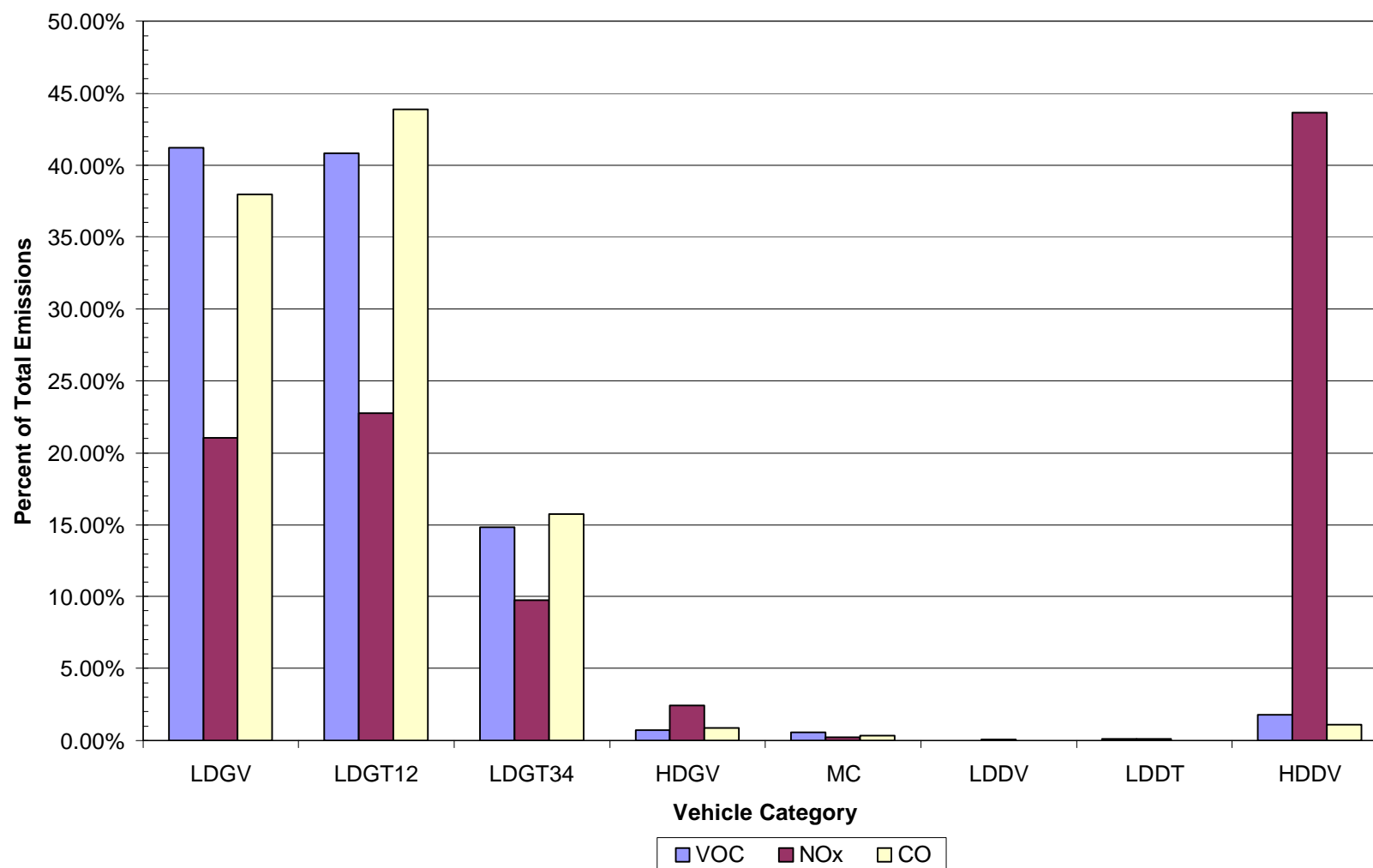
1999 NOx Emissions in Kingsport EAC (171 tpd)



2007 NOx Emissions in Kingsport EAC (145 tpd)



**Johnson City, Kingsport, Bristol EAC Area
2007 Emissions Contribution by Each Vehicle Type**





Potential Emission Reduction Actions and TCMs